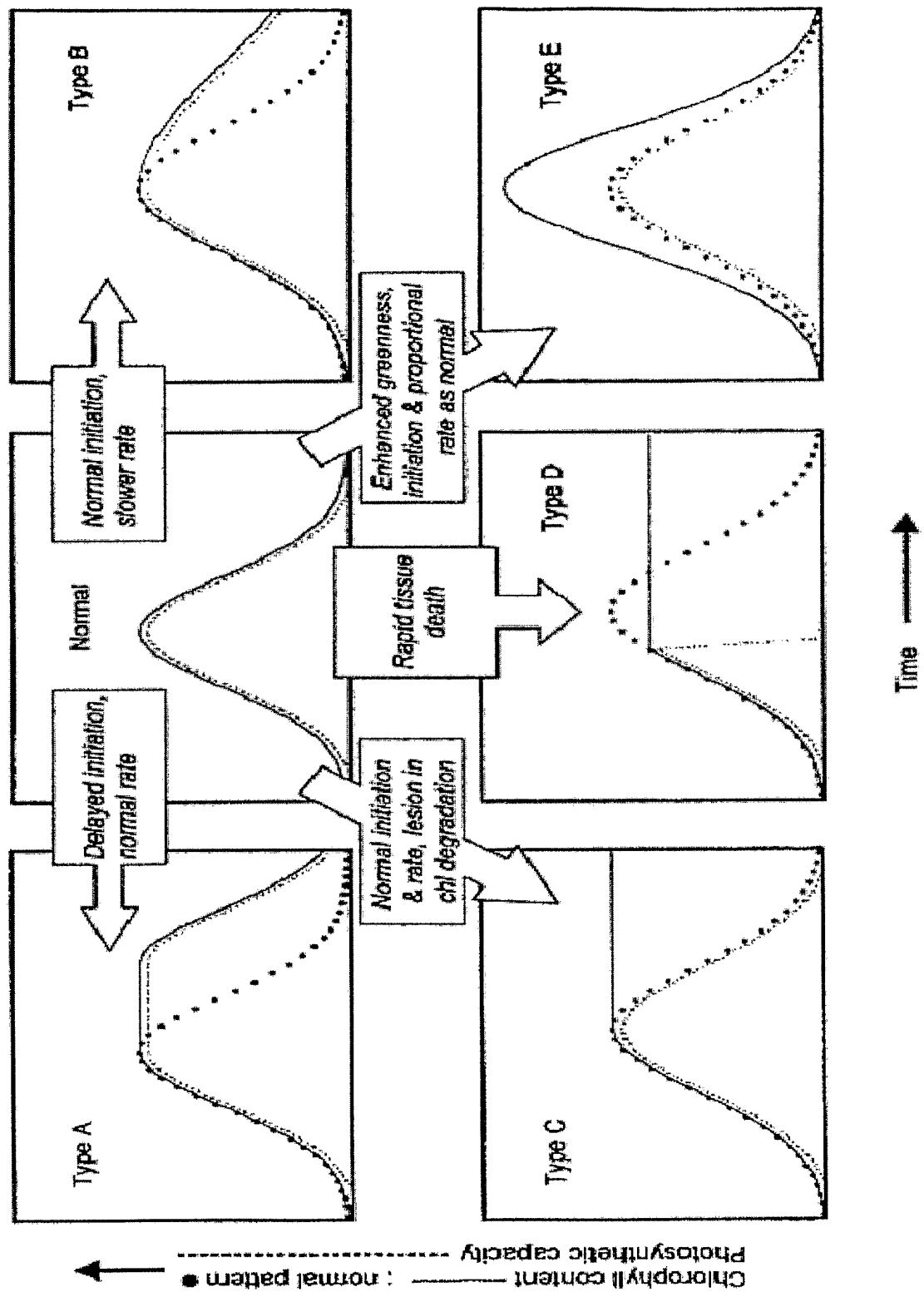


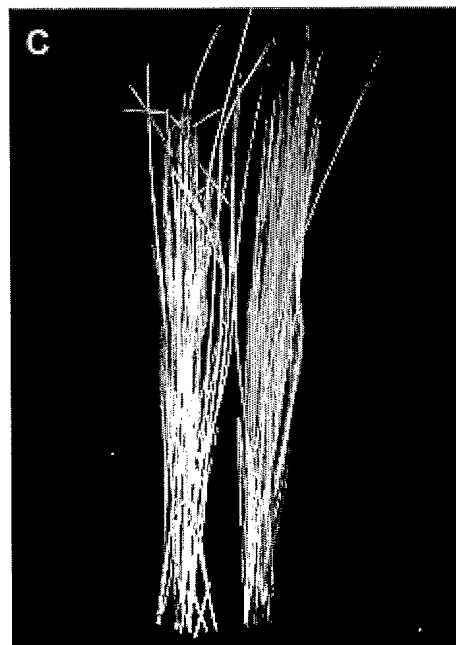
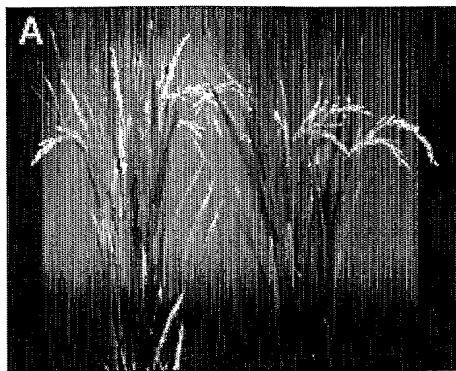
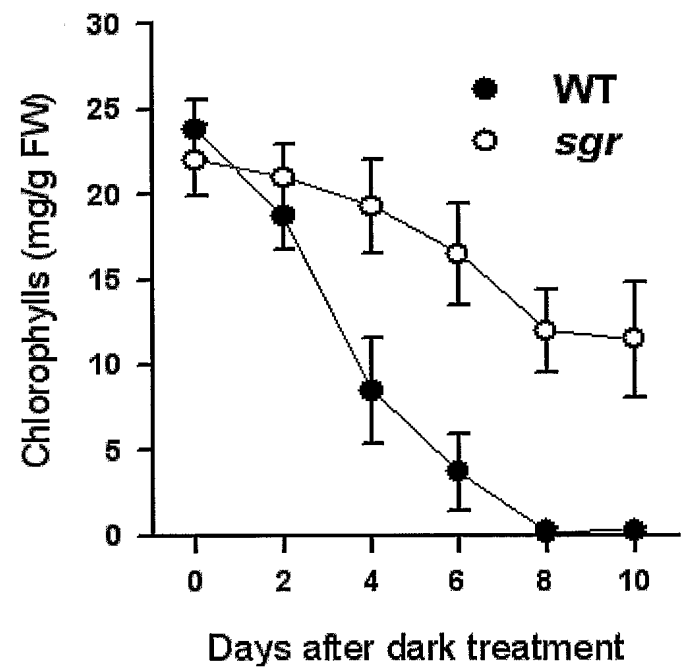
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FIG. 1



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FIG. 2

**D**

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FIG. 3

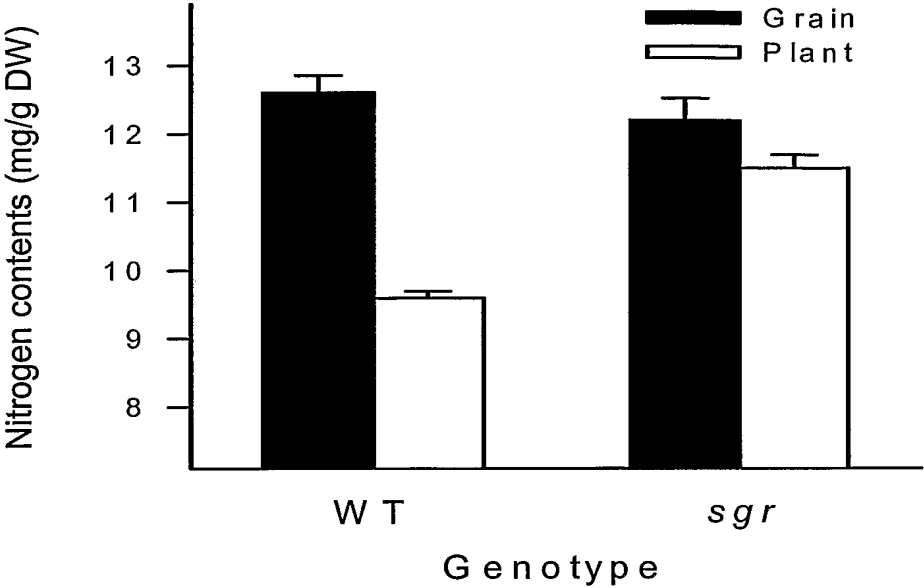
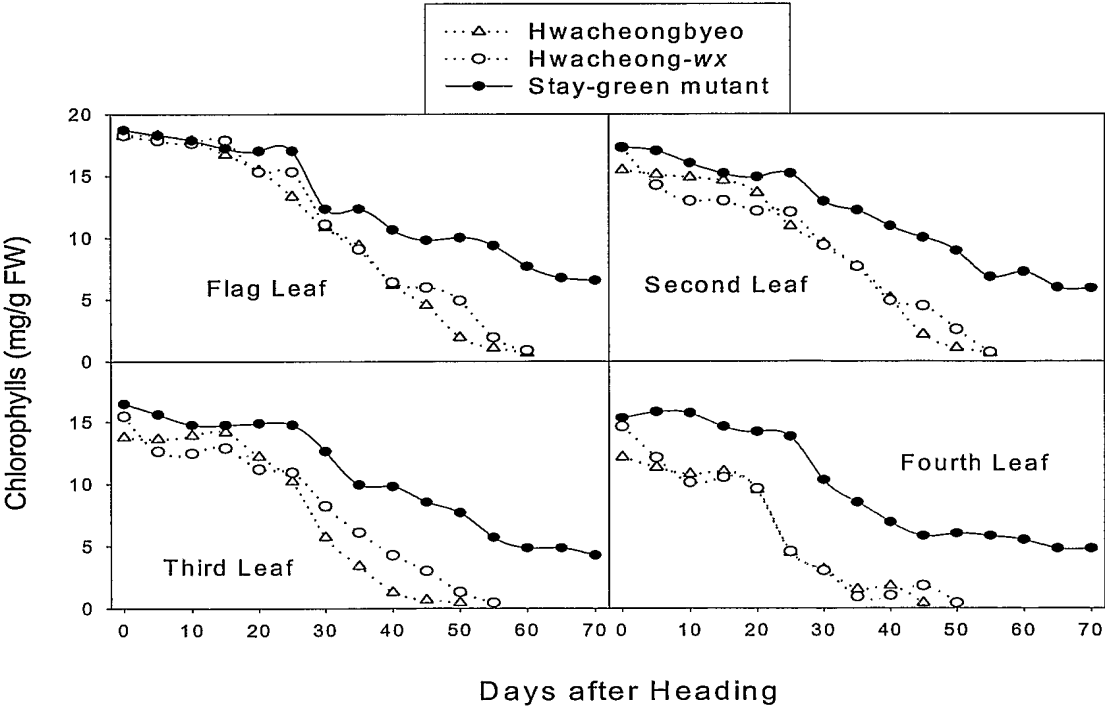
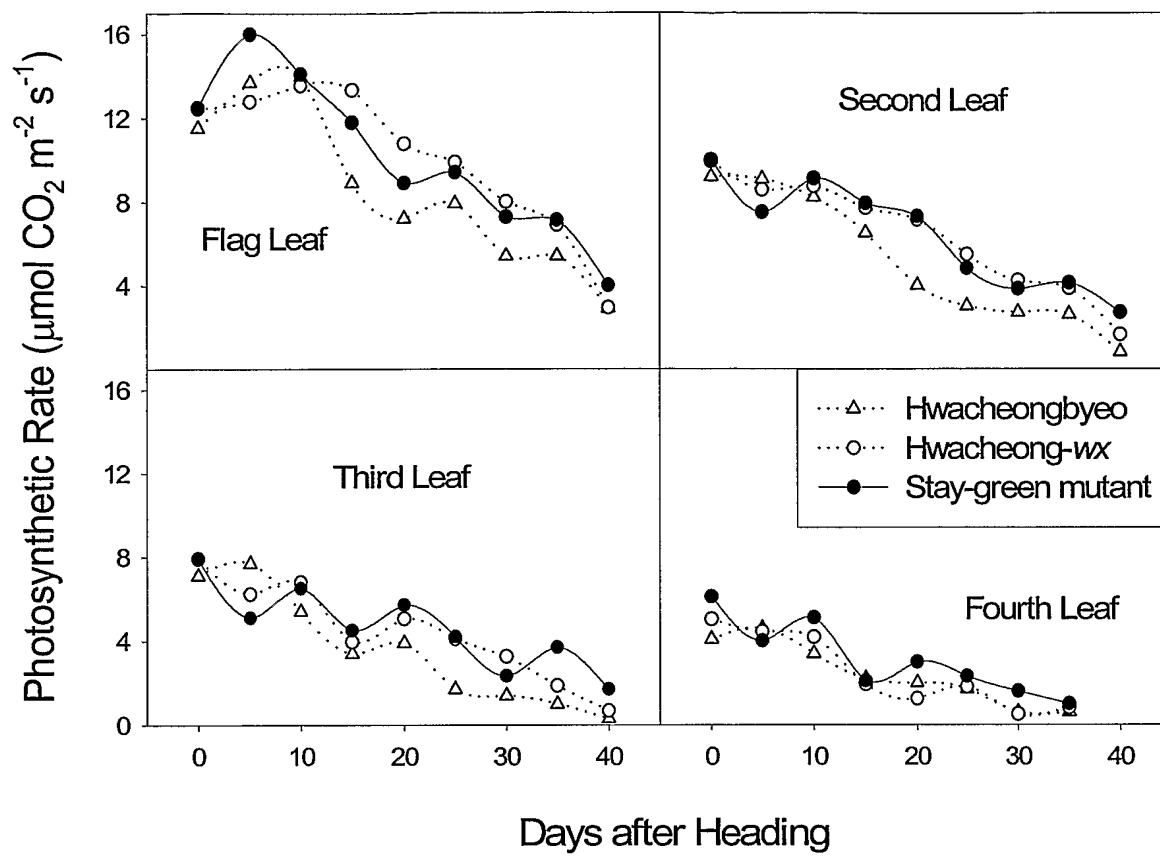


FIG. 4

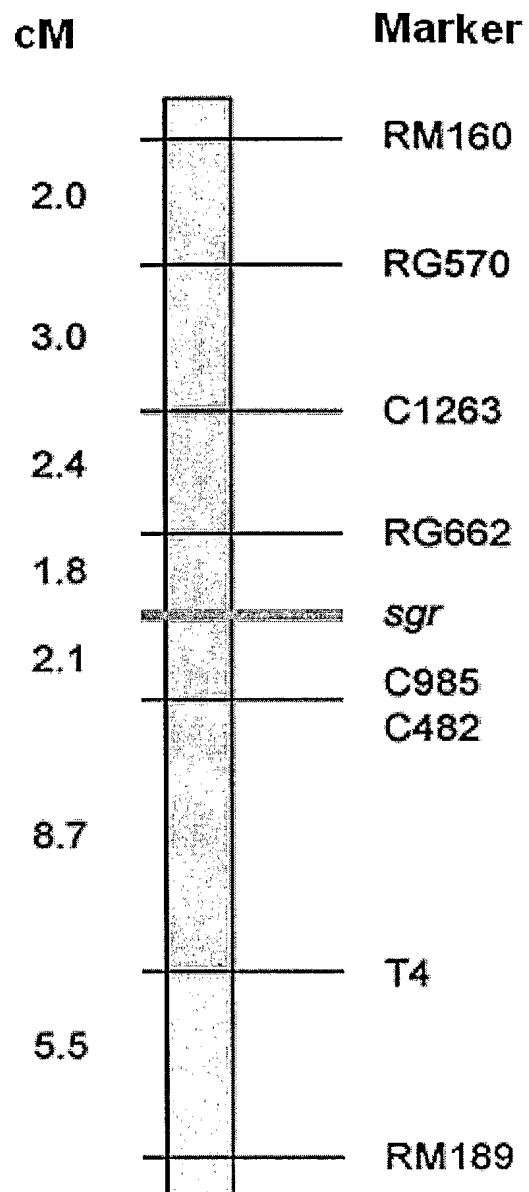


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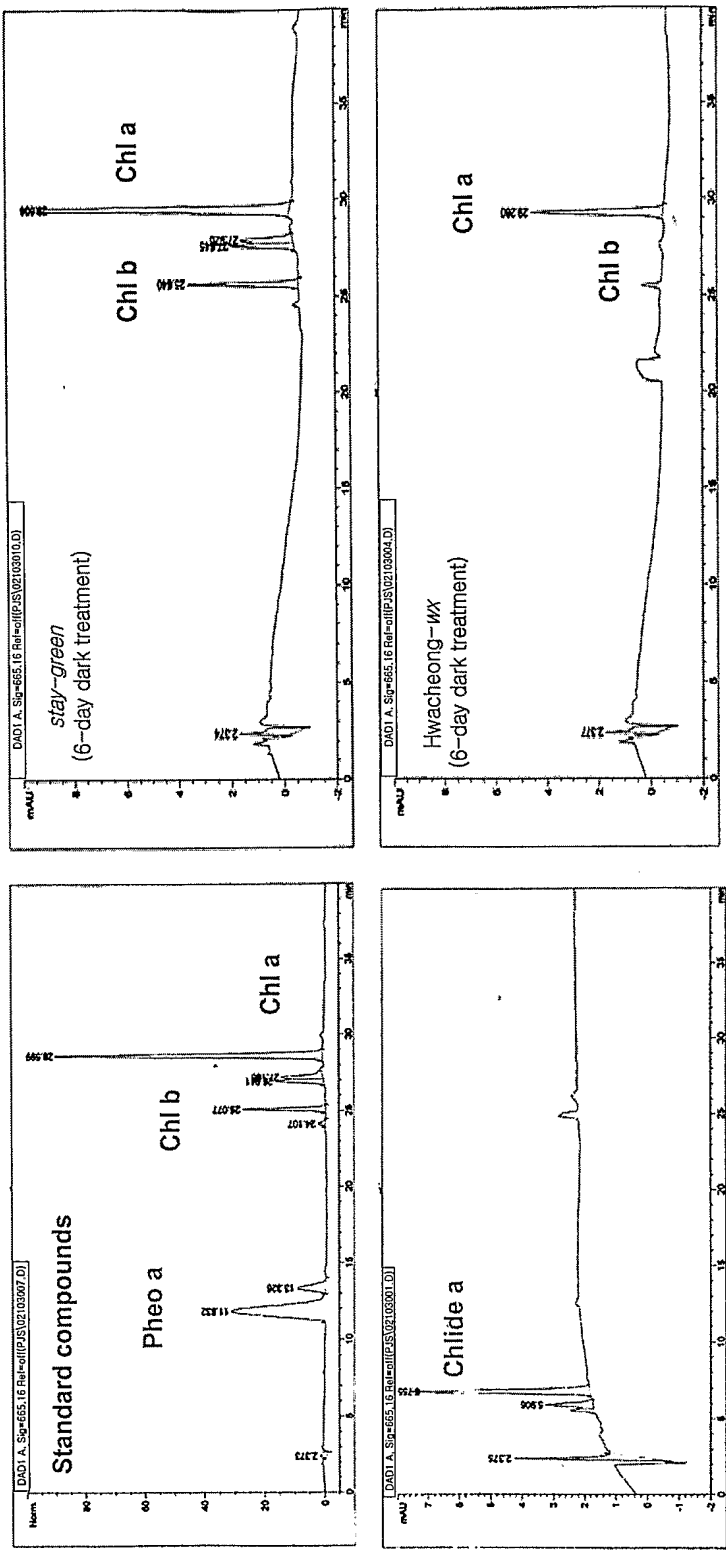
FIG. 5



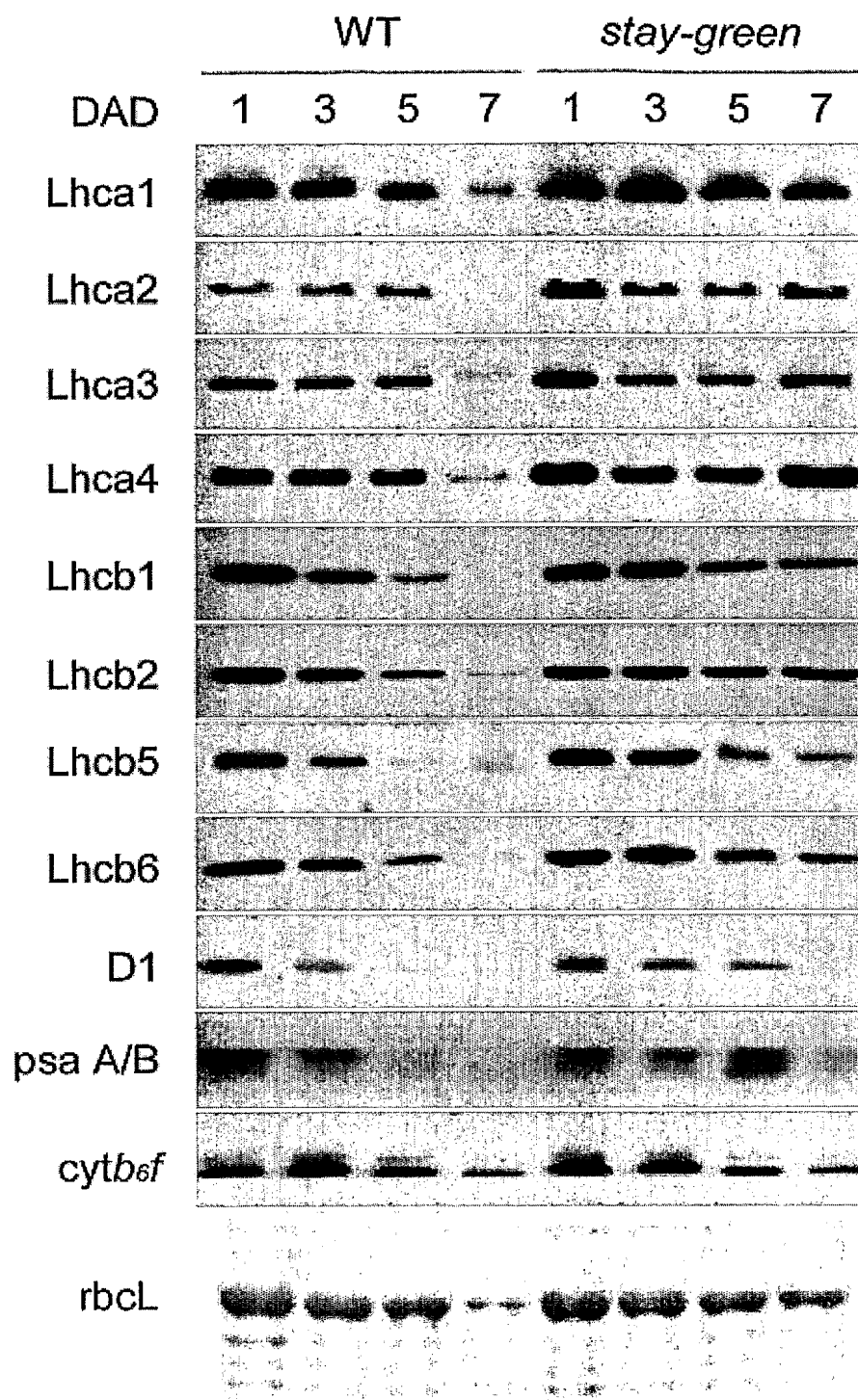
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FIG. 6



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FIG. 7

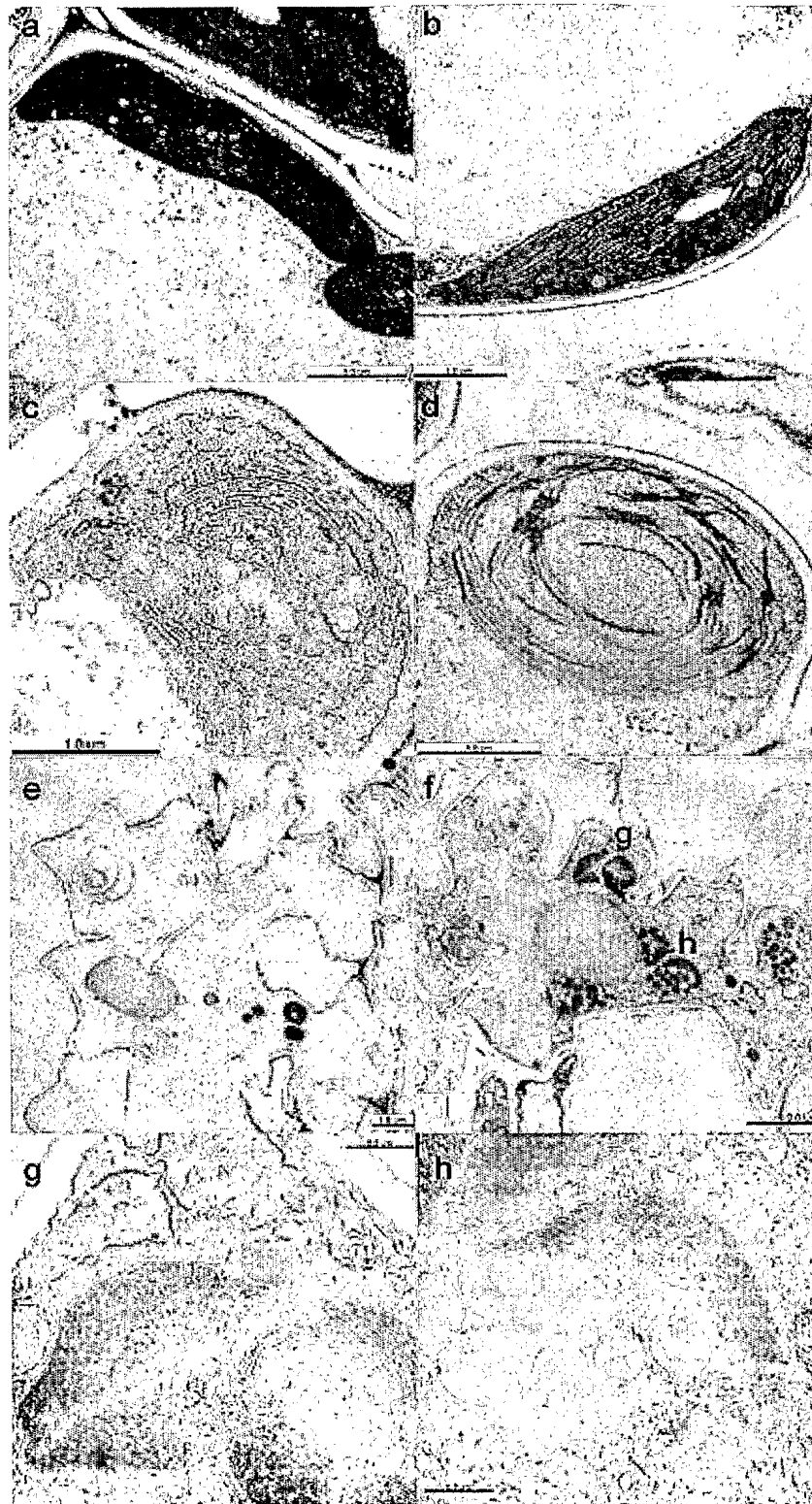


HPLC Running Time (min)

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FIG. 8

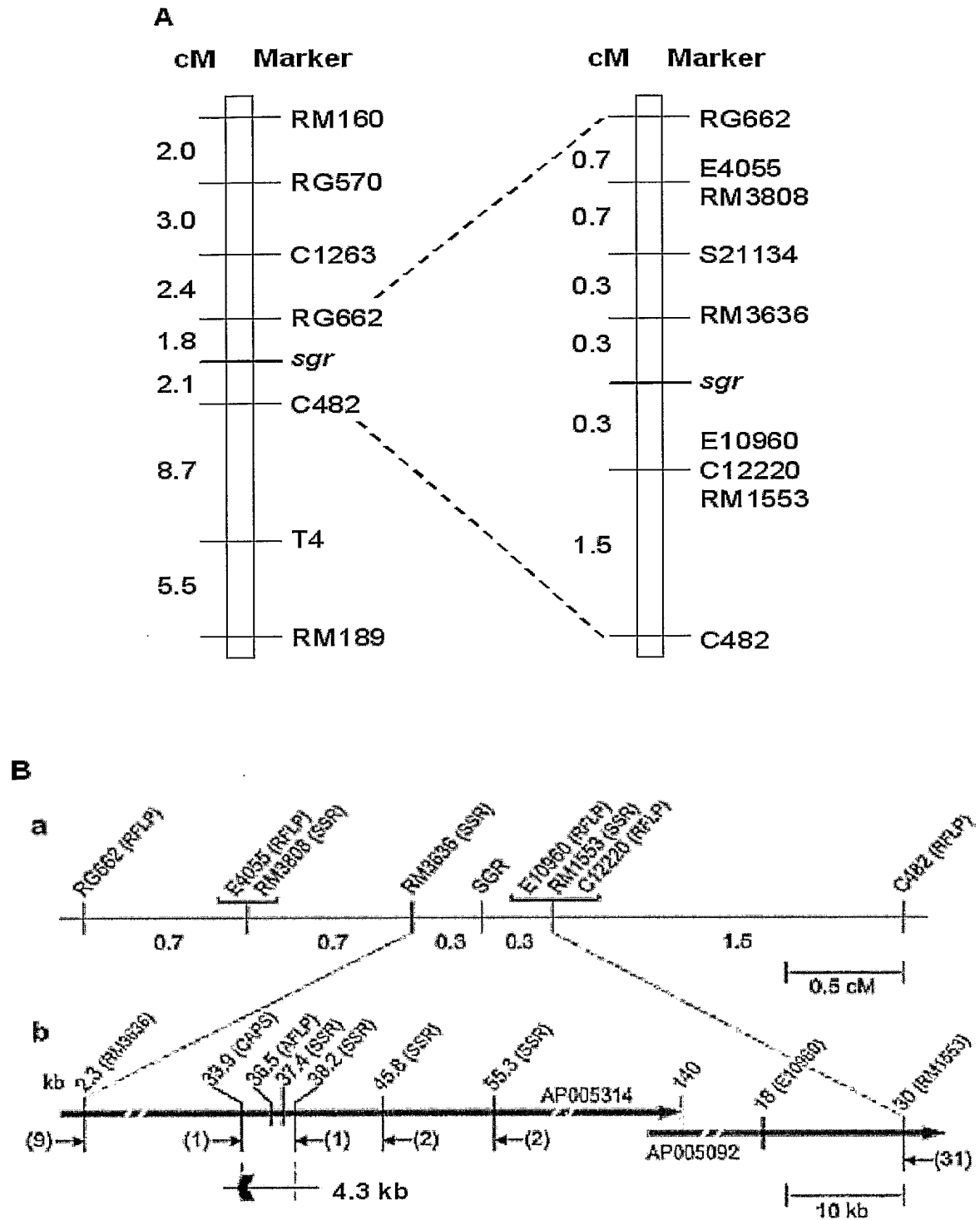
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FIG. 9





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FIG. 10



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FIG. 11

<b>AP005314</b>	289	ctggcgggtgtcgcacaccatcaaccggg	cgagctgcaggggtggtacaacaagctgcag	348
<i>sgr</i>	171	ctggcggatgtcgcacaccatcaaccggg	cgagctgcaggggtggtacaacaagctgcag	230
<b>AP005314</b>	289	ctggcgggtgtcgcacaccatcaaccggg	cgagctgcaggggtggtacaacaagctgcag	348
<i>sgr</i> F <sub>2</sub> (844)	170	ctggcggatgtcgcacaccatcaaccggg	cgagctgcaggggtggtacaacaagctgcag	229
<b>AP005314</b>	289	ctggcgggtgtcgcacaccatcaaccggg	cgagctgcaggggtggtacaacaagctgcag	348
<b>Hwacheong-wx</b>	585	ctggcgggtgtcgcacaccatcaaccggg	cgagctgcaggggtggtacaacaagctgcag	526
<b>(japonica)</b>				
<b>AP005314</b>	289	ctggcgggtgtcgcacaccatcaaccggg	cgagctgcaggggtggtacaacaagctgcag	348
<b>Milyang23</b>	180	ctggcgggtgtcgcacaccatcaaccggg	cgagctgcaggggtggtacaacaagctgcag	239
<b>(indica)</b>				

FIG. 12

```

1  MAAATS TMSLLFPITQQRWHAADSLVVLASRCHNSRRRRRCRYVVPRAR  50
    chloroplast-targeting
    signal peptide
                                     (gtg)
51  LFGPAIFEASKLKVLFLGVDEEKHQHPGKLPRTYTLTHSDVTARLTLAVS 100
                                     M
                                     (atg)
                                     (missense mutation)

101 HTINRAQLQGWNKLQRDEVVAEWKKVQGHMSLHVHCHISGGHVLLDLIA 150

151 GLRYYIFRKELPVVLKAFVHGDGNLFSRHPELEEATVWVYFHSNLPRFNR 200

201 VECWGPLRDAGAPPEEDDAVAAAAAEEAAAEQMPAAGEWPRRCPGQCDC 250

251 EPPYSLIPWPHOHADVAAADGPOOO 274

```

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FIG. 13

Darkness (days)

0    2    4    6    8

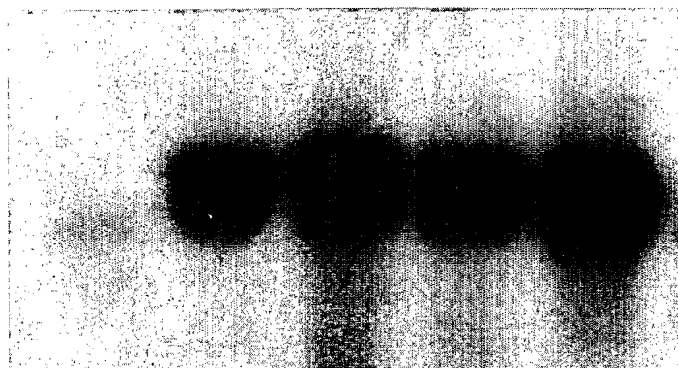


FIG. 14

## 2-d dark treatment

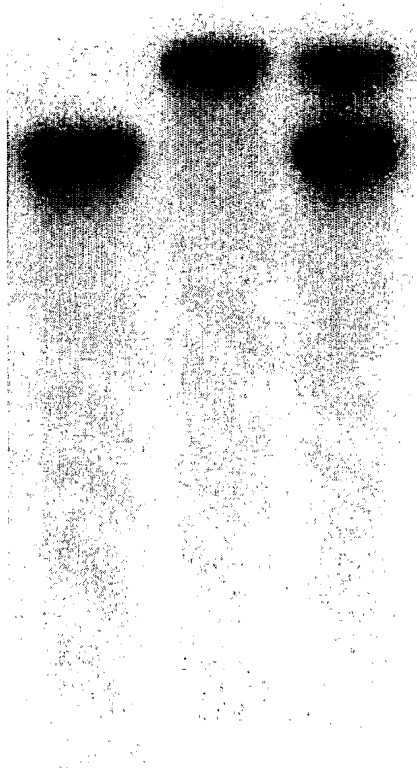
control	H <sub>2</sub> O	6-BA (100μM)	ethephon (150μM)
---------	------------------	-----------------	---------------------



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FIG. 15

<i>sgr</i>	M23	F <sub>1</sub>
J	I	H



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## FIG. 16

Rice	MAAATSTMSLLPPIITQQQ--RWHAADSLV-VLASRCHNSRRRRRCRYVVPRARLFG
Maize1	MAAAASTMSLLP-ISQPRKQQQGGAGAVV-VFQRRPWDARRRR---YVVPTARLFG
Sorghum	MAAATAAAASTMSLLP-ISQLR-QQHGAGAVV-VFRRRARDARRRR---YVVPTARLFG
Maize2	MAAATAAAASTMSLLP-ISQLR--QQHGAG---AMRRRPWVARRRR---YVVPTARLFG
Barley	MAIAAAAGASTMSLLP-ISHLKQLQLORRRAR-----PGRVLVLGRRR--RHVVPRARLFG
Wheat1	MATASTMSLLP-ISHLKQMQQRRTRLAGALPGKVLVLGRRR--RHVVPRARLFG
Wheat2	MATASTMSLLP-ISHLKQMQQRRTRLAGALPGKVLVLGRRR--RHVVPRARLFG

Rice	PAIFEASKLKVLFLGVDEE---KHQHPG-----KLPRTYTLTHSDVTARLTLAVS
Maize1	PAIFEASKLKVLFLGVDEGSS-KHLHAHHPAP----APLLPRTYTLTHSDVTASLTLAVS
Sorghum	PAIFEASKLKVLFLGVDEESNNKHGHPTTPSPPTSPPLPLLPRTYTLTHSDVTASLTLAVS
Maize2	PAIFEASKLKVLFLGVDEEAGSKQHGP-----LPRTYTLTHSDVTARLTLAVS
Barley	PAIFEASKLKVLFLGVDEE---KHHPG-----KLPRTYTLTHSDVTARLTLAVS
Wheat1	PAIFEASKLKVLFLGVDEE---KHHPG-----KLPRTYTLTHSDVTARLTLAVS
Wheat2	PAIFEASKLKVLFLGVDEE---KHHPG-----KLPRTYTLTHSDVTARLTLAVS

Rice	HTINRAQLQGWNRLQORDEVVAEWKKVQGHMSLHVHCHISGGHVLDDLIAGLRYYIFRKE
Maize1	HTINRAQLQGWNRLQORDEVVAEWKKVRCRMSLHVHCHISGGHLLDDLIAGLRYYIFRKE
Sorghum	HTINRAQLQGWNRLQORDEVVAEWKKVRCRMSLHV-----
Maize2	HTINRAQLQGWNRLQORDEVVAEWKKVRCRMSLHVHCHISGGHFLDDLIAGLRYYIFRKE
Barley	HTIHAAQLQGWNRLQORDEVVAEWKKVQGHMSLHVHCHISGGHFLDDLIAPLRYYIFRKE
Wheat1	HTIHAAQLQGWNRLQORDEVVAEWKKVQGHMSLHVHCHISGGHFLDDLIAPLRYYIFRKE
Wheat2	HTIHAAQLQGWNRLQORDEVVAEWKKVQGHMSLHVHCHISGGHFLDDLIAPLRYYIFRKE

Rice	LPVVLKAFVHGDGNLFSRHPELEEATVWVYFHSNLPFRNVECWGPLRDAGAP-PEEDDA
Maize1	LPVVLKAFVHGDGDLFSRHPELEEATVWVYFHSNLARFNVECWGPLRDAAAPAPAEDDS
Sorghum	----LKAFFVHGDGDLFSRHPELEEAPVWVYFHSNLTRFNVECWGPLRDAAAP-PAEDDS
Maize2	LPVVLKAFVHGDGDLFSRHPELEEATVWVYFHSNLARFNVECWGPLRDAAAP--AEDDS
Barley	LSVVLKAFVHGDGSLFSRHPELEEATVWVYFHSNNPNFNVECWGPLSDAAAPYDDEAAV
Wheat1	LPVVLKAFVHGDGSLFSRHPELEEATVWVYFHSNNPNFNVECWGPLREAAAPYDNKTPT
Wheat2	LPVVLKAFVHGDGSLFSRHPELEEATVWVYFHSNNPNFNVECWGPLAMPRA-LDDETPR

Rice	VAAAAAEE-AAAEOMPARGEWPRRCPG-----QCDCCFPPIPSLIPWPQHDMAAADG-
Maize1	TAPAAASI-AMEGOMP-VGEWPHRCPO-----QCDCCFPPIPSLIPWPNEQDMAAAG-
Sorghum	TAPAAAS--NKDGOMPPVGEWPHYRCPO-----QCDCCFPPIPSLIPWPNERDMAAAAD
Maize2	TAPPDASNSKEAGOMMAMEWPHRCPO-----QCGCCFPPIPSLIPWPNEHDMAAADAS
Barley	DSPAADAAMAATAVNTAADEQATRAGOWPRRCPGQCDCCFPPECLIPWPHEHMAADAG-
Wheat1	RPCPOGDAGDKKAMDRAAPR-GSRGME-----CFSRPNPIPGP-RIQMPPPR--
Wheat2	DSHRRRTVPLHDDSRRAASAPGAPALD-----GVF-QNAIPG--ADPLAANR--

Rice	-----QPQQ	274
Maize1	-----QVRQQ	281
Sorghum	ASSAAGQAQQQ	266
Maize2	-----GSAQQQ	274
Barley	-----QAPFQ	281
Wheat1	-----QAPQ	266
Wheat2	-----QSPQ	264

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FIG. 17

Soybean1  
Soybean2  
M. truncatula  
Grape  
Orange  
Poplar1  
Poplar2  
Lettuce  
Potato  
Iceplant  
Arabidopsis1  
Arabidopsis2

```

MCTLTITVP--VLPSKLNKPSLS----PHHNSLFPCYGR--VGKKNKAMVPVARLFGPAIFEASKLKVLFLGVDEKHP
MGTLTITVP--VLPSKLNKPSLS----PRHNSLFPCYGR--VGKKNKAMVPVARLFGPAIFEASKLKVLFLGVDEKHP
MGTLTITAPPMLTSKF-KPSFS----PQHKLFPNR-RR--LWKKNQSIVPVARLFGPAIFEASKLKVLFLGVDEKHP
MATLTAAI--VLPSKL-KPSFS----QHSSSLFVCR-RR--PKKSNPAFP-AARLFGPAIFEASKLKVLFLGVDEKHP
MASLVAAL--GLPSKL-KASPY----EQNNLFFVSR-RR--SKKKNQSFAPVARLFGPAIFEASKLKVLFLGVDEKHP
MGSIAIAP--FLPSKL-RPSIL----DQSSSLFSPK-KK--LKKKNQSIIPVARLFGPSIFEASKLKVLFLGVDEKHP
MGSIAVAP--FLPSKP-RPSLF----DQSSSLFSPS-TK--LKKKNQSIIPVARLFGPSIFEASKLKVLFLGVDEKHP
----MASI--ILPTKONPPSSSFLHQNHNPNPFTNKR--KLKKNOALVPVARLFGPSIFEASKLKVLFLGVDEKHP
MGTLTASL--VVPKLN-----NEKQSSLFVHKTR--KSKKNQSIIPVARLFGPAIFEASKLKVLFLGVDEKHP
MGTLTASM--LLPSKLKPS-----VFEDQSSVYFKRSCGLPKLNKAKSFSFVMRLFGPAIFEASKLKVLFLGVDEKHP
MCSLSAAM--LLPCKLKPAYSDKRSNSSSSSLFFNNRR--SKKKNQSIIPVARLFGPAIFEASKLKVLFLGVDEKHP
MCSLATNL--LLPSKMKPVFPEKLS----TSLCVTTR--SKMKNRISIPVARLFGPAIFEASKLKVLFLGVDEKHP

```

Soybean1  
Soybean2  
M. truncatula  
Grape  
Orange  
Poplar1  
Poplar2  
Lettuce  
Potato  
Iceplant  
Arabidopsis1  
Arabidopsis2

```

ENLPRTYTLTHSDITAKLTLLAISQITINNSQLQGWYNRLORDEVVAQWKVKGMSLHVHCHISGGHFLDLARLRYFIF
ENLPRTYTLTHSDITAKLTLLAISQITINNSQLQGWYNRLORDEVVAQWKVKGMSLHVHCHISGGHFLDLARLRYFIF
ENLPRTYTLTHSDITAKLTLLAISQITINNSQLQGWYNRLORDEVVAQWKVKGMSLHVHCHISGGHFLDLARLRYFIF
GKLPRTYTLTHSDITAKLTLLAISQITINNSQLQGWYNRLORDEVVAQWKVKGMSLHVHCHISGGHFLDLARLRYFIF
EKLPRTYTLTHSDITAKLTLLAISQITINNSQLQGWYNRLORDEVVAEWKVKGMSLHVHCHISGGHFLDLARLRYFIF
ENLPRTYTLTHSDITAKLTLLAISQITINNSQLQGWYNRLORDEVVAEWKVKGMSLHVHCHISGGHFLDLARLRYFIF
ENLPRTYTLTHSDITAKLTLLAISQITINNSQLQGWYNRLORDEVVAEWKVKGMSLHVHCHISGGHFLDLARLRYFIF
GKLPRTYTLTHSDITAKLTLLAISQITINNSQLQGWYNRLORDEVVAEWKVKGMSLHVHCHISGGHFLDLARLRYFIF
GKLPRTYTLTHSDITAKLTLLAISQITINNSQLQGWYNRLORDEVVAEWKVKGMSLHVHCHISGGHFLDLARLRYFIF
GKLPRTYTLTHSDITAKLTLLAISQITINNSQLQGWYNRLORDEVVAEWKVKGMSLHVHCHISGGHFLDLARLRYFIF
STLPRTYTLTHSDITAKLTLLAISQITINNSQLQGWYNRLORDEVVAEWKVKGMSLHVHCHISGGHFLDLARLRYFIF
AKLPRTYTLTHSDITAKLTLLAISQITINNSQLQGWYNRLORDEVVAEWKVKGMSLHVHCHISGGHFLDLARLRYFIF

```

Soybean1  
Soybean2  
M. truncatula  
Grape  
Orange  
Poplar1  
Poplar2  
Lettuce  
Potato  
Iceplant  
Arabidopsis1  
Arabidopsis2

```

CKELPVVLKAVVHGDENLFNNSYPELQDALVWVYFHSNIEFNKVECWGPKKEASAPTGGVQEE-----EQETLLS
CKELPVVLKAVVHGDENLFNNSYPELQDALVWVYFHSNIEFNKVECWGPKKEASAPTGGVQEE-----EQETLLS
CKELPVVLKAVVHGDENLFNNSYPELQDALVWVYFHSNIEFNKVECWGPKKEASAPTGGVQEE-----EQETLLS
CKELPVVLKAVVHGDENLFNNSYPELQDALVWVYFHSNIEFNKVECWGPKKEASAPTGGVQEE-----EQETLLS
CKELPVVLKAVVHGDENLFNNSYPELQDALVWVYFHSNIEFNKVECWGPKKEASAPTGGVQEE-----EQETLLS
CKELPVVLKAVVHGDENLFNNSYPELQDALVWVYFHSNIEFNKVECWGPKKEASAPTGGVQEE-----EQETLLS
CKELPVVLKAVVHGDENLFNNSYPELQDALVWVYFHSNIEFNKVECWGPKKEASAPTGGVQEE-----EQETLLS
CKELPVVLKAVVHGDENLFNNSYPELQDALVWVYFHSNIEFNKVECWGPKKEASAPTGGVQEE-----EQETLLS
CKELPVVLKAVVHGDENLFNNSYPELQDALVWVYFHSNIEFNKVECWGPKKEASAPTGGVQEE-----EQETLLS
CKELPVVLKAVVHGDENLFNNSYPELQDALVWVYFHSNIEFNKVECWGPKKEASAPTGGVQEE-----EQETLLS
CKELPVVLKAVVHGDENLFNNSYPELQDALVWVYFHSNIEFNKVECWGPKKEASAPTGGVQEE-----EQETLLS
CKELPVVLKAVVHGDENLFNNSYPELQDALVWVYFHSNIEFNKVECWGPKKEASAPTGGVQEE-----EQETLLS
CKELPVVLKAVVHGDENLFNNSYPELQDALVWVYFHSNIEFNKVECWGPKKEASAPTGGVQEE-----EQETLLS
CKELPVVLKAVVHGDENLFNNSYPELQDALVWVYFHSNIEFNKVECWGPKKEASAPTGGVQEE-----EQETLLS

```

Soybean1  
Soybean2  
M. truncatula  
Grape  
Orange  
Poplar1  
Poplar2  
Lettuce  
Potato  
Iceplant  
Arabidopsis1  
Arabidopsis2

```

--GLAIP-QPCQ-EECCCFPPITLSFIQWSKQVPSRHH--EPCDGIGTQOQL 261
KEGLAIP-QPCQ-EECCCFPPITLSFIQWSKQVPSHHY--EPCDGIETQOQL 271
HQNLTLT-EPCC-ETCCCFPPITLSFIQWSKQVPSHHY--EPCDGIETQOQL 263
SSKWERPEPCM-ENCTCCFFPMSLIPWSQDIAHENIHD-----TQGLQOQT 274
ISNWELP-EPCC-ETCCCFPPMSLIPWSEKPLQATENR--GTGQESLQOQTR 271
ATDANLP-EPCC-ENCTCCFFPMSLIPWSEMPQENKNN--PSTQOT-FQQAQQP 260
SSNWDLT-EPCC-ENCTCCFFPMSLIPWSKMPLEDKNN--PSTPON-LQOP 270
SNNWELP-KPCL-EACACCFPPMSLIPWSDLVKNQDDD--DGATHGLQOQA 280
NNKWELP-KPCL-EACACCFPPMSLIPWSSNLDGIGEE--NGTIQGLQEQS 272
DNLELIP-ETCK-EPCTCCFFPMSLIPWSSALSQDDLHL-SGTHGLQEQOQT 286
-KTETLPEARCA-DECCCFPPITSSIPWSHLSNEGVMGYSGTQTEGIATPNPEKL 268
KKSETLPELPCP-DECCCFPPITSSIPWSHSHRHYQHTAADEN-VADGLLETPNPGKSG 271

```

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## FIG. 18

Rice	MAAATSTMSL-----LPEITQQQRWHAADSLVVLASRCHN
Orange	MASLVAAALG-----LPSKLKASPYEQQNALFVSRR----
Pine	MAVARISAGKTQHCYSFSPSDVRISSAPQNSQSQFKRKSKIKLSRFLAS

---

Rice	-----SRRRRRCRYVVP-----ARLFGPAIFEASKLKVL
Orange	-----RSKKKNQSFAP-----VARLFGPAIFEASKLKVL
Pine	ESSWNGLVAHQLQCNNRHRTNSSFPRSTSRVVARLFGPAIFQASKLKVL

---

Rice	LGVDEEKHQHPGKLPRYTLTHSDVTARLTAVSHNTINRAQLQGWYNKLO
Orange	LGVDEEK--HPGKLPRYTLTHSDITSKLTLAITSQTINNSQLQGWYNRLQ
Pine	LGTHEEK--HPAHLPRYTLTHSDITAKLTAFSQTINKD--QGWYNRLQ

---

Rice	RDEVVAEWKKVQGHMSLVHCHISGGHVLLDLIAGLRXYIFRKELPVVLK
Orange	RDEVVAEWKKVKCKMSLVHCHISGGHFLLDICARLRFFIFSKELPVVLK
Pine	RDEVLAQWKKSQCKMSLVHCHISGGHWLLDAIARLRFYIFRKELPVVLE

---

Rice	AFVHGDGNLFSRHPELEEATVWVYFHSNIPRFNRVECWGPLRDAGAPPEE
Orange	AFVHGDGNLLNNHPELQEALVWVYFHSNIPEFNKVECWGPKLKEAVAGSSE
Pine	AFRHGDRAALLEKHPELETALVWVYFHSNVKEFKRVECWGSLAEACKGAPS

---

Rice	DDAVAAAAAEEAAAEQMPAAGEWPRRCPGQDCCFPFMSLIPW----PHQ
Orange	----AGCTRHEIRQETSISNWELPEPCQETCNCCFPFMSLIPWSEKLPLQ
Pine	-----NLNKELDELGGKLEMPSHCAEPCSCCFPFMSVLLR----PED

---

Rice	HDVAAADGQ---PQQ	274
Orange	TENRGTOGOESLQQQTR	271
Pine	VEQFS	290

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## FIG. 19

Arabidopsis1	-----MCSSAHM-----LLE-----FKLKPAYSDK-----RSNSSSSSLFFNNRR-----SKKKNQSLVP-----VA
Arabidopsis2	-----MCSSAHM-----LLE-----FKLKPAYSDK-----RSNSSSSSLFFNNRR-----SKKKNQSLVP-----VA
Lettuce	-----MASL-----LLE-----FKLKPAYSDK-----RSNSSSSSLFFNNRR-----SKKKNQSLVP-----VA
Potato	-----MGSLDASL-----LLE-----FKLKPAYSDK-----RSNSSSSSLFFNNRR-----SKKKNQSLVP-----VA
Iceplant	-----MGSLDASM-----LLE-----FKLKPAYSDK-----RSNSSSSSLFFNNRR-----SKKKNQSLVP-----VA
Soybean1	-----MGSLDASM-----LLE-----FKLKPAYSDK-----RSNSSSSSLFFNNRR-----SKKKNQSLVP-----VA
Soybean2	-----MGSLDASM-----LLE-----FKLKPAYSDK-----RSNSSSSSLFFNNRR-----SKKKNQSLVP-----VA
M. truncatula	-----MGSLDASM-----LLE-----FKLKPAYSDK-----RSNSSSSSLFFNNRR-----SKKKNQSLVP-----VA
Grape	-----MGSLDASM-----LLE-----FKLKPAYSDK-----RSNSSSSSLFFNNRR-----SKKKNQSLVP-----VA
Orange	-----MGSLDASM-----LLE-----FKLKPAYSDK-----RSNSSSSSLFFNNRR-----SKKKNQSLVP-----VA
Poplar1	-----MGSLDASM-----LLE-----FKLKPAYSDK-----RSNSSSSSLFFNNRR-----SKKKNQSLVP-----VA
Poplar2	-----MGSLDASM-----LLE-----FKLKPAYSDK-----RSNSSSSSLFFNNRR-----SKKKNQSLVP-----VA
Pine	-----MGSLDASM-----LLE-----FKLKPAYSDK-----RSNSSSSSLFFNNRR-----SKKKNQSLVP-----VA
Maize1	-----MAAATAASTMS-----LLE-----FKLKPAYSDK-----RSNSSSSSLFFNNRR-----SKKKNQSLVP-----VA
Sorghum	-----MAAATAASTMS-----LLE-----FKLKPAYSDK-----RSNSSSSSLFFNNRR-----SKKKNQSLVP-----VA
Maize2	-----MAAATAASTMS-----LLE-----FKLKPAYSDK-----RSNSSSSSLFFNNRR-----SKKKNQSLVP-----VA
Rice	-----MAAATAASTMS-----LLE-----FKLKPAYSDK-----RSNSSSSSLFFNNRR-----SKKKNQSLVP-----VA
Wheat1	-----MAAATAASTMS-----LLE-----FKLKPAYSDK-----RSNSSSSSLFFNNRR-----SKKKNQSLVP-----VA
Wheat2	-----MAAATAASTMS-----LLE-----FKLKPAYSDK-----RSNSSSSSLFFNNRR-----SKKKNQSLVP-----VA
Barley	-----MAAATAASTMS-----LLE-----FKLKPAYSDK-----RSNSSSSSLFFNNRR-----SKKKNQSLVP-----VA
Arabidopsis1	RLFGPAIFEASKLVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLAISQISINNLSQGLWNRRLRDEVVAEWKK
Arabidopsis2	RLFGPAIFEASKLVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLAISQISINNLSQGLWNRRLRDEVVAEWKK
Lettuce	RLFGPAIFEASKLVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLAISQISINNLSQGLWNRRLRDEVVAEWKK
Potato	RLFGPAIFEASKLVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLAISQISINNLSQGLWNRRLRDEVVAEWKK
Iceplant	RLFGPAIFEASKLVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLAISQISINNLSQGLWNRRLRDEVVAEWKK
Soybean1	RLFGPAIFEASKLVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLAISQISINNLSQGLWNRRLRDEVVAEWKK
Soybean2	RLFGPAIFEASKLVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLAISQISINNLSQGLWNRRLRDEVVAEWKK
M. truncatula	RLFGPAIFEASKLVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLAISQISINNLSQGLWNRRLRDEVVAEWKK
Grape	RLFGPAIFEASKLVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLAISQISINNLSQGLWNRRLRDEVVAEWKK
Orange	RLFGPAIFEASKLVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLAISQISINNLSQGLWNRRLRDEVVAEWKK
Poplar1	RLFGPAIFEASKLVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLAISQISINNLSQGLWNRRLRDEVVAEWKK
Poplar2	RLFGPAIFEASKLVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLAISQISINNLSQGLWNRRLRDEVVAEWKK
Pine	RLFGPAIFEASKLVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLAISQISINNLSQGLWNRRLRDEVVAEWKK
Maize1	RLFGPAIFEASKLVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLAISQISINNLSQGLWNRRLRDEVVAEWKK
Sorghum	RLFGPAIFEASKLVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLAISQISINNLSQGLWNRRLRDEVVAEWKK
Maize2	RLFGPAIFEASKLVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLAISQISINNLSQGLWNRRLRDEVVAEWKK
Rice	RLFGPAIFEASKLVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLAISQISINNLSQGLWNRRLRDEVVAEWKK
Wheat1	RLFGPAIFEASKLVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLAISQISINNLSQGLWNRRLRDEVVAEWKK
Wheat2	RLFGPAIFEASKLVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLAISQISINNLSQGLWNRRLRDEVVAEWKK
Barley	RLFGPAIFEASKLVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLAISQISINNLSQGLWNRRLRDEVVAEWKK
Arabidopsis1	VKGKMSLVHCHISGGHFLDLCAKLYRIFCKELPVVLKAFVHGDGNLLNYPPELOEALVWVYFHSNPEFNKVECWGPLKEAVSE---
Arabidopsis2	VKGKMSLVHCHISGGHFLDLCAKLYRIFCKELPVVLKAFVHGDGNLLNYPPELOEALVWVYFHSNPEFNKVECWGPLKEAVSE---
Lettuce	VKGKMSLVHCHISGGHFLDLCAKLYRIFCKELPVVLKAFVHGDGNLLNYPPELOEALVWVYFHSNPEFNKVECWGPLKEAVSE---
Potato	VKGKMSLVHCHISGGHFLDLCAKLYRIFCKELPVVLKAFVHGDGNLLNYPPELOEALVWVYFHSNPEFNKVECWGPLKEAVSE---
Iceplant	VKGKMSLVHCHISGGHFLDLCAKLYRIFCKELPVVLKAFVHGDGNLLNYPPELOEALVWVYFHSNPEFNKVECWGPLKEAVSE---
Soybean1	VKGKMSLVHCHISGGHFLDLCAKLYRIFCKELPVVLKAFVHGDGNLLNYPPELOEALVWVYFHSNPEFNKVECWGPLKEAVSE---
Soybean2	VKGKMSLVHCHISGGHFLDLCAKLYRIFCKELPVVLKAFVHGDGNLLNYPPELOEALVWVYFHSNPEFNKVECWGPLKEAVSE---
M. truncatula	VKGKMSLVHCHISGGHFLDLCAKLYRIFCKELPVVLKAFVHGDGNLLNYPPELOEALVWVYFHSNPEFNKVECWGPLKEAVSE---
Grape	VKGKMSLVHCHISGGHFLDLCAKLYRIFCKELPVVLKAFVHGDGNLLNYPPELOEALVWVYFHSNPEFNKVECWGPLKEAVSE---
Orange	VKGKMSLVHCHISGGHFLDLCAKLYRIFCKELPVVLKAFVHGDGNLLNYPPELOEALVWVYFHSNPEFNKVECWGPLKEAVSE---
Poplar1	VKGKMSLVHCHISGGHFLDLCAKLYRIFCKELPVVLKAFVHGDGNLLNYPPELOEALVWVYFHSNPEFNKVECWGPLKEAVSE---
Poplar2	VKGKMSLVHCHISGGHFLDLCAKLYRIFCKELPVVLKAFVHGDGNLLNYPPELOEALVWVYFHSNPEFNKVECWGPLKEAVSE---
Pine	VKGKMSLVHCHISGGHFLDLCAKLYRIFCKELPVVLKAFVHGDGNLLNYPPELOEALVWVYFHSNPEFNKVECWGPLKEAVSE---
Maize1	VKGKMSLVHCHISGGHFLDLCAKLYRIFCKELPVVLKAFVHGDGNLLNYPPELOEALVWVYFHSNPEFNKVECWGPLKEAVSE---
Sorghum	VKGKMSLVHCHISGGHFLDLCAKLYRIFCKELPVVLKAFVHGDGNLLNYPPELOEALVWVYFHSNPEFNKVECWGPLKEAVSE---
Maize2	VKGKMSLVHCHISGGHFLDLCAKLYRIFCKELPVVLKAFVHGDGNLLNYPPELOEALVWVYFHSNPEFNKVECWGPLKEAVSE---
Rice	VKGKMSLVHCHISGGHFLDLCAKLYRIFCKELPVVLKAFVHGDGNLLNYPPELOEALVWVYFHSNPEFNKVECWGPLKEAVSE---
Wheat1	VKGKMSLVHCHISGGHFLDLCAKLYRIFCKELPVVLKAFVHGDGNLLNYPPELOEALVWVYFHSNPEFNKVECWGPLKEAVSE---
Wheat2	VKGKMSLVHCHISGGHFLDLCAKLYRIFCKELPVVLKAFVHGDGNLLNYPPELOEALVWVYFHSNPEFNKVECWGPLKEAVSE---
Barley	VKGKMSLVHCHISGGHFLDLCAKLYRIFCKELPVVLKAFVHGDGNLLNYPPELOEALVWVYFHSNPEFNKVECWGPLKEAVSE---
Arabidopsis1	-DGH-----KTETLPEAR-----CA-----DCCGSCCFPPVSIPIWHS-LSNEGNGVSGTGTESATNPKEKL-----
Arabidopsis2	-DGH-----KTETLPEAR-----CA-----DCCGSCCFPPVSIPIWHS-LSNEGNGVSGTGTESATNPKEKL-----
Lettuce	-DGH-----KTETLPEAR-----CA-----DCCGSCCFPPVSIPIWHS-LSNEGNGVSGTGTESATNPKEKL-----
Potato	-DGH-----KTETLPEAR-----CA-----DCCGSCCFPPVSIPIWHS-LSNEGNGVSGTGTESATNPKEKL-----
Iceplant	-DGH-----KTETLPEAR-----CA-----DCCGSCCFPPVSIPIWHS-LSNEGNGVSGTGTESATNPKEKL-----
Soybean1	-DGH-----KTETLPEAR-----CA-----DCCGSCCFPPVSIPIWHS-LSNEGNGVSGTGTESATNPKEKL-----
Soybean2	-DGH-----KTETLPEAR-----CA-----DCCGSCCFPPVSIPIWHS-LSNEGNGVSGTGTESATNPKEKL-----
M. truncatula	-DGH-----KTETLPEAR-----CA-----DCCGSCCFPPVSIPIWHS-LSNEGNGVSGTGTESATNPKEKL-----
Grape	-DGH-----KTETLPEAR-----CA-----DCCGSCCFPPVSIPIWHS-LSNEGNGVSGTGTESATNPKEKL-----
Orange	-DGH-----KTETLPEAR-----CA-----DCCGSCCFPPVSIPIWHS-LSNEGNGVSGTGTESATNPKEKL-----
Poplar1	-DGH-----KTETLPEAR-----CA-----DCCGSCCFPPVSIPIWHS-LSNEGNGVSGTGTESATNPKEKL-----
Poplar2	-DGH-----KTETLPEAR-----CA-----DCCGSCCFPPVSIPIWHS-LSNEGNGVSGTGTESATNPKEKL-----
Pine	-DGH-----KTETLPEAR-----CA-----DCCGSCCFPPVSIPIWHS-LSNEGNGVSGTGTESATNPKEKL-----
Maize1	-DGH-----KTETLPEAR-----CA-----DCCGSCCFPPVSIPIWHS-LSNEGNGVSGTGTESATNPKEKL-----
Sorghum	-DGH-----KTETLPEAR-----CA-----DCCGSCCFPPVSIPIWHS-LSNEGNGVSGTGTESATNPKEKL-----
Maize2	-DGH-----KTETLPEAR-----CA-----DCCGSCCFPPVSIPIWHS-LSNEGNGVSGTGTESATNPKEKL-----
Rice	-DGH-----KTETLPEAR-----CA-----DCCGSCCFPPVSIPIWHS-LSNEGNGVSGTGTESATNPKEKL-----
Wheat1	-DGH-----KTETLPEAR-----CA-----DCCGSCCFPPVSIPIWHS-LSNEGNGVSGTGTESATNPKEKL-----
Wheat2	-DGH-----KTETLPEAR-----CA-----DCCGSCCFPPVSIPIWHS-LSNEGNGVSGTGTESATNPKEKL-----
Barley	-DGH-----KTETLPEAR-----CA-----DCCGSCCFPPVSIPIWHS-LSNEGNGVSGTGTESATNPKEKL-----



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## FIG. 20

Potato	MGTLTASLVVPSKLN---NEKQ----SSIFVHKTRRKSKKNQST-VPVAR
Tomato	MGTLTTSLVVPSKLN---NEQQ----SSIFTHKTRRKCKKNQST-VPVAR
Rape1	MCSLATNLLLPSTMKPAFTEKON--TNSLFLTNKRSLMQNRSTVPVPVAR
Rape2	MCSLSANMLLPITKLKPAYSQKRGNSTNSLLVSNTRSK-RKNQSV-VPMAR
<hr/>	
Potato	LFGPAIFEASKLKVLFLGVDEEKHPGKLPRTYTLTHSDITSKLTLAISQT
Tomato	LFGPAIFEASKLKVLFLGVDEEKHPGKLPRTYTLTHSDITSKLTLAISQT
Rape1	LLEPAIFEASKLKVSFLGVDEKKHPSKLPRTYTLTHSDITAKLTLAISQS
Rape2	LFGPAIFESSKLKVLFLGVDDKKHPPTLPRTYTLTHSDITAKLTLAISH (partial)
<hr/>	
Potato	INNSQLQGWNRLQDEVVAEWKKVKGKMSLHVHCHISGGHFMLDLFARL
Tomato	INNSQLQGWNRLQDEVVAEWKKVKGKMSLHVHCHISGGHFMLDLFARL
Rape1	INNSQLQGWANRLFRDEVVAEWKKVKGKMSLHVHCHISGGHFLDLIAKL
Lotus2	(partial) DLCAKL
<hr/>	
Potato	RNYIFCKELPVVLKAFVHGDENLLKNNPELQEALVWVYFHSNIOEFNKVE
Tomato	RNYIFCKELPVVLKAFVHGDENLLRNYPELQEALVWVYFHSNIOEFNKVE
Rape1	RYIIFCKELPVVLKAFVHGDGNLLNSYPELQESPVWVY---SIQ-----
Lotus1	(partial) YPELQDALVWVYFHSKIPEFNKVO
Lotus2	RYEIFCKELPVVLKAFTHGDENLFNNYPELEESLVWVYFHSNISEFNKVE
Sugarbeet	(partial) PELQEASVWVYFHS SIPEFNKVE
<hr/>	
Potato	CWGPKLDATSPS-SSSSGVGGVKST---SFTSNSNNKWEIPKPCEEACA
Tomato	CWGPKLDATSPS-SSSGGVGGVKST---SFTSH (partial)
Rape1	-----TSPS-TIRLNVGGRFGR---PRSTN (partial)
Lotus1	CWGPKLEAAAPSG-----GSPEKEGEGVKMPDPCPEECE
Lotus2	CWGPKLDACATS-----IG-----SYSYDKG--MPQTQPCQONCE
Sugarbeet	CWGPKLDAVDPPSKNKKRMMINDEQDKEEEEEAASSKWEMLVPTCKPCR
<hr/>	
Potato	CCFPP---MSVMPWPSSNLDGIGEENGTIQQGLQEQQS
Lotus1	CCFPPPPALDPIPWSEEVPSPHYEAFDGVGTRPNL
Lotus2	CCFTIP---MSSSDWIG-----TQOKL
Sugarbeet	CCFPP---TSLIPWT-----PSLSQEQQQEQQLPGDVSIPPPGTR

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FIG. 21

Rice	MAAATSTMSLLPPIITQQQRWHAADSLVVLASRCHNSRRRRRCRYVVPRAR
Rice	LFGPAIFEASKLKVLFLGVDEEKHQHPGKLPR
Zoysia	(partial) TYTLTHSDVTAKLTLAVS
Rice	HTINRAQLQGWNKLRDEVVAEWKVKVQGHMSLVHCHISGGHVLLDLIA
Zoysia	HTIHAAQLQGWNRLQRDEVVAEWRKVRGNMSLVHCHISGGHFLRDLIA
sugarcane	(partial) TRLDLIA
Rice	GLRYYIFRKELPVVLKAFVHGDGNLFSRHPELEEATVWVYFHSNLPFRNR
Zoysia	PLRYYIFRKELPVVLKAFVHGDGSLFSSHPLEEATVWVYFHSNLPFRNR
sugarcane	GLRYYIFRKELPVVLKAFVHGDGLFSRHPELEDA TVWVYFHSNLTRFNR
Rice	VECWGPLRDAGAPPEEDDAVAAAAAEEAAAAEQMPAAAGEWPRRCPGQCDCC
Zoysia	VECWGPLCDAAAPVEEE-----GQONDDRIP-AGEWPRRCPOQCECC
sugarcane	VECWGPLRDAAAPPAEEDS-TAPAASNSKEGOMPPVGEWPYRCPOQCDCC
Rice	FPPYSLIPWPHQHDMA--AAD---GQPQQ
Zoysia	FPPHSLIPWPNEHDMMA--PTDAPAAGQTQQ
sugarcane	FPPHSLIPWPNEHDMMAAAADATAAGQAQQQ

FIG. 22

Pine	MAVARISAGKTQHCYSFSPSDVRISAPQNSQSQFKRKSKIKLSSRFLAS
Pine	ESSWNGLVAHQLQCNNRHRRTNSSFPRSTSRVVARLFGPAIFQASKLKVLFL
Pine	LGTHEEKHPAHLPRITYTLTHSDITAKLTLAFSQT
Spruce	(partial) INKDKLQGWNRLQRD
Pine	EVLIAQWKKSQGMKSLHVHCHISGGHWLLDAIARLRFYIFRKELPVVLEAF
Spruce	EVLIAQWKKSQGMKSLHVHCHISGGHWLLDAIARLRFYIFRKELPVVLEAF
Pine	RHGDRALEKHPLEETALVWVYFHSNVREFKRVCEWGS LAEACKGAPSNL
Spruce	RHGDRALEKHPLEETALVWVYFHSNVREFKRVCEWGS LAEACKGAPSNL
Pine	NKELD-ELDGCKLEMPSHCAEPCS CCFPPFSVLLRPEDVEQFS
Spruce	EKELDEEFNCEKLEMPSHCSEPCNCCFPPFSVLLRPEDAEOET

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FIG. 23

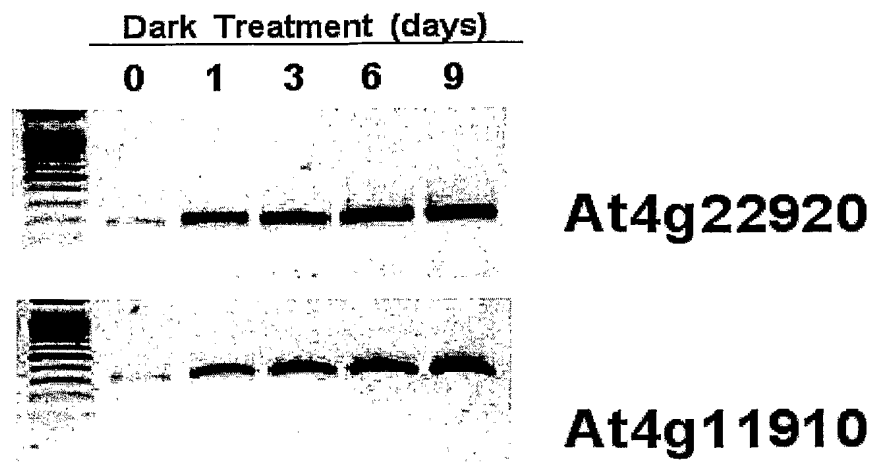
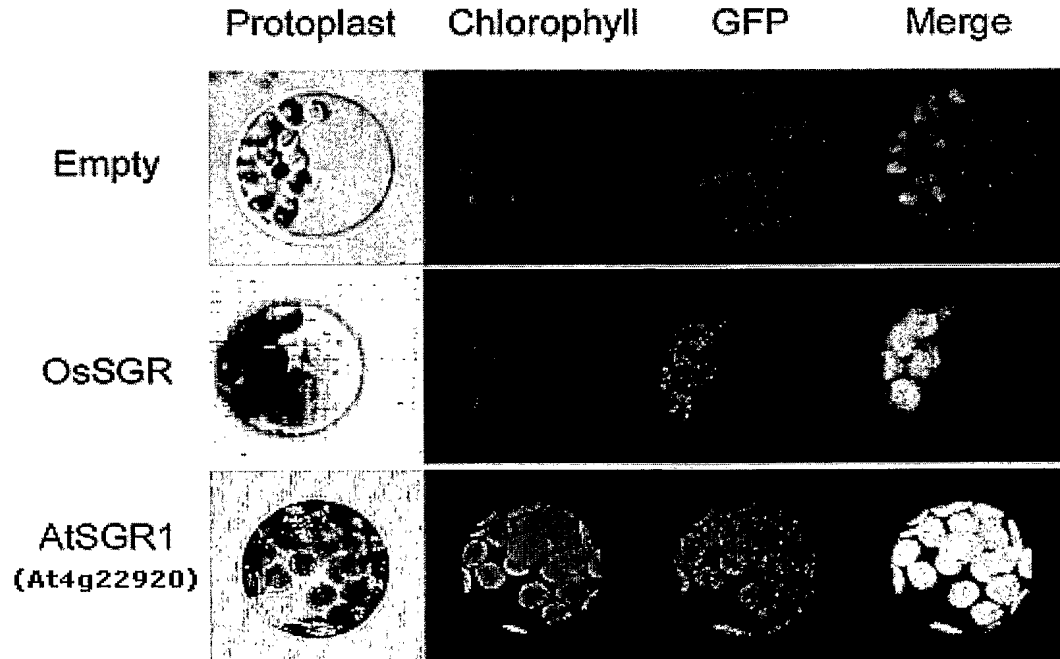
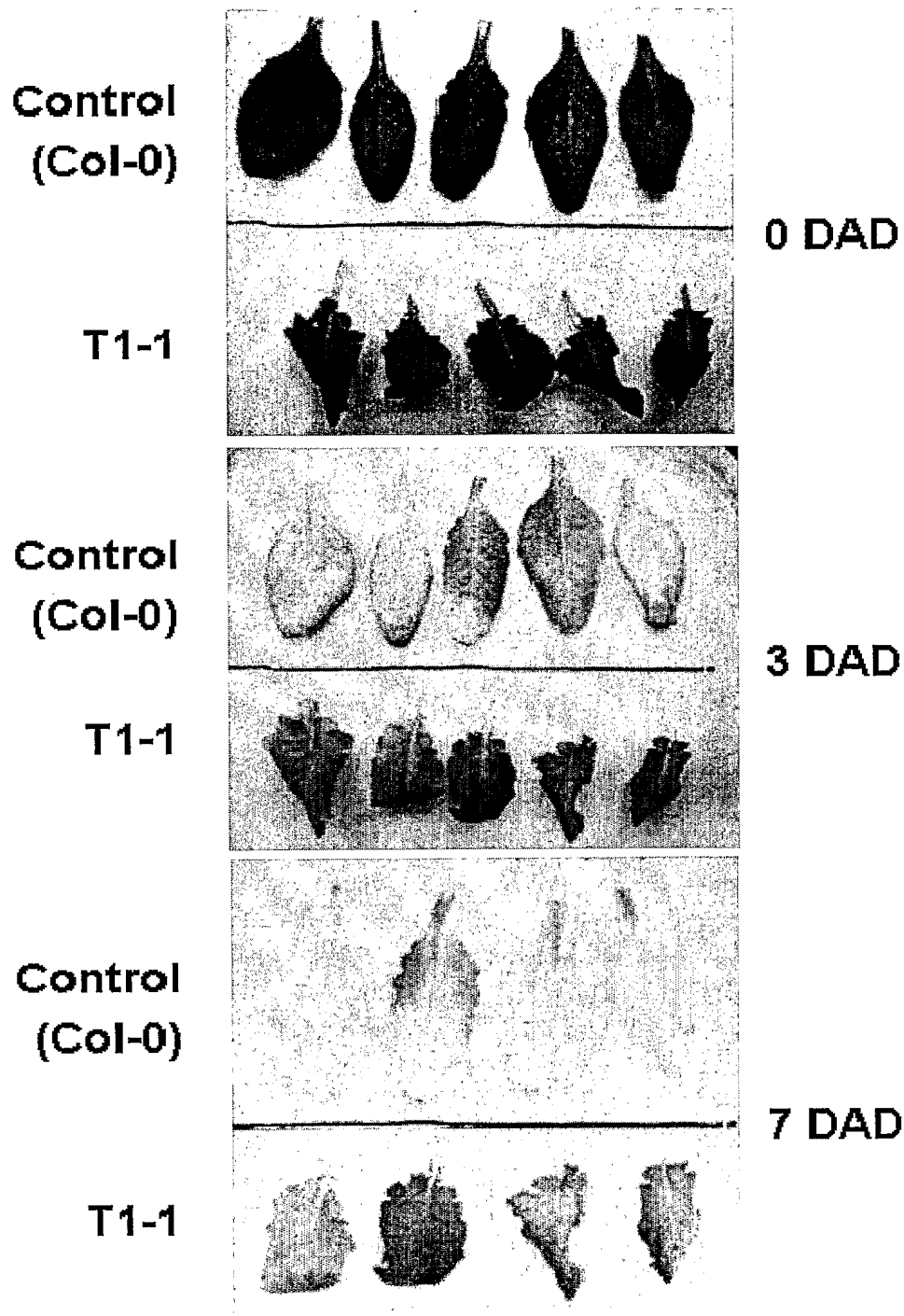


FIG. 24



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FIG. 25



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FIG. 26

